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CLAIMS

1. An isolated nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain has activity against one or more plant pests.

2. The isolated nucleic acid molecule of Claim 1 wherein the polypeptide comprises in its mature domain cysteine residues in the following locations:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈
a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII}

wherein "a" may be the same or different and represents any amino acid residue and the numerical subscript on each "a" represents its position in the amino acid sequence and "C" represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

3. The isolated nucleic acid molecule of Claim 1 or 2 wherein the polypeptide comprises a mature domain having the amino acid sequence [SEQ ID NO:58]:

X₃₀X₃₁CX₃₂X₃₃X₃₄SX₃₅X₃₆FX₃₇GX₃₈CX₃₉X₄₀X₄₁X₄₂X₄₃CX₄₄X₄₅X₄₆CX₄₇X₄₈EX₄₉
FX₅₀X₅₁GX₅₂CX₅₃X₅₄X₅₅X₅₆X₅₇X₅₈CX₅₉CTX₆₀X₆₁C

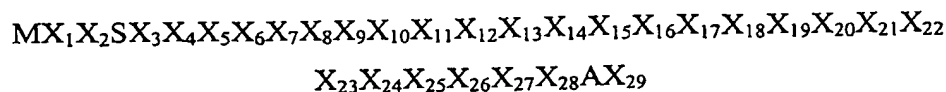
wherein

X ₃₀	=	R or Q
X ₃₁	=	E, I or T
X ₃₂	=	K or E
X ₃₃	=	T, A or S
X ₃₄	=	E, P or Q

- 83 -

X ₃₅	=	N, Q or H
X ₃₆	=	T or R
X ₃₇	=	P, K or H
X ₃₈	=	I, L, P or T
X ₃₉	=	I, F, S or V
X ₄₀	=	T, M, R or S
X ₄₁	=	K, D, E or A
X ₄₂	=	P or S
X ₄₃	=	P, S or N
X ₄₄	=	R or A
X ₄₅	=	K, T, S or N
X ₄₆	=	A, Y or V
X ₄₇	=	I, L, Q or H
X ₄₈	=	S, K, T or N
X ₄₉	=	K or G
X ₅₀	=	T, S, I, or V
X ₅₁	=	D or G
X ₅₂	=	H, R, or N
X ₅₃	=	S, P or R
X ₅₄	=	K, W, A or G
X ₅₅	=	I, L or F
X ₅₆	=	L, Q, P or R
X ₅₇	=	R or P
X ₅₈	=	R or K
X ₅₉	=	L or F
X ₆₀	=	K, S or R
X ₆₁	=	P, N or H.

4. The isolated nucleic acid molecule of Claim 1 or 2 wherein the polypeptide comprises a signal domain having the amino acid sequence [SEQ ID NO:59]:-



wherein

X_1	=	A, G or K
X_2	=	R, N, or L
X_3	=	L, I or M
X_4	=	C, F or R
X_5	=	F or L
X_6	=	M, F or I
X_7	=	A or S
X_8	=	F, T or A
X_9	=	A, L, V or F
X_{10}	=	I, V, L or F
X_{11}	=	L or I
X_{12}	=	A, I or M
X_{13}	=	M, A or F
X_{14}	=	M or L
X_{15}	=	L or I
X_{16}	=	F or V
X_{17}	=	V, T or L
X_{18}	=	A, T or S
X_{19}	=	Y or T
X_{20}	=	E or G
X_{21}	=	V or M
X_{22}	=	no amino acid or G
X_{23}	=	no amino acid or P
X_{24}	=	no amino acid, M or V
X_{25}	=	no amino acid or T
X_{26}	=	no amino acid, I or S
X_{27}	=	no amino acid, A or V
X_{28}	=	Q or E

- 85 -

X₂₉ = no amino acid or Q.

5. The isolated nucleic acid molecule of Claim 1 or 2 wherein the polypeptide comprises a C-terminal domain having the amino acid sequence [SEQ ID NO:60]:-

X₆₂X₆₃X₆₄X₆₅X₆₆X₆₇X₆₈X₆₉X₇₀X₇₁X₇₂X₇₃X₇₄X₇₅X₇₆X₇₇X₇₈X₈₀ X₈₁X₈₂X₈₃X₈₄
X₈₅X₈₆X₈₇X₈₈X₈₉X₉₀X₉₁X₉₂X₉₃X₉₄X₉₅

wherein

X ₆₂	=	no amino acid or V
X ₆₃	=	no amino acid or F
X ₆₄	=	no amino acid or D
X ₆₅	=	no amino acid or E or K
X ₆₆	=	no amino acid or K or I
X ₆₇	=	no amino acid or M or S
X ₆₈	=	no amino acid or T, I or S
X ₆₉	=	no amino acid or K or E
X ₇₀	=	no amino acid or T or V
X ₇₁	=	no amino acid or G or K
X ₇₂	=	no amino acid or A
X ₇₃	=	no amino acid or E
X ₇₄	=	no amino acid or I or T
X ₇₅	=	no amino acid or L
X ₇₆	=	no amino acid or A, V or G
X ₇₇	=	no amino acid or E
X ₇₈	=	no amino acid or E
X ₇₉	=	no amino acid or A
X ₈₀	=	no amino acid or K
X ₈₁	=	no amino acid or T
X ₈₂	=	no amino acid or L
X ₈₃	=	no amino acid or A or S
X ₈₄	=	no amino acid or A or E

- 86 -

X_{85} = no amino acid or A or V
 X_{86} = no amino acid or L or V
 X_{87} = no amino acid or L
 X_{88} = no amino acid or E
 X_{89} = no amino acid or E
 X_{90} = no amino acid or E
 X_{91} = no amino acid or I
 X_{92} = no amino acid or M
 X_{93} = no amino acid or D or M
 X_{94} = no amino acid or N or E.

6. The isolated nucleic acid molecule of Claim 1 or 2 wherein the polypeptide comprises the amino acid sequence [SEQ ID NO:61]:-

$MX_1X_2SX_3X_4X_5X_6X_7X_8X_9X_{10}X_{11}X_{12}X_{13}X_{14}X_{15}X_{16}X_{17}X_{18}X_{19}X_{20}X_{21}X_{22}X_{23}X_{24}X_{25}$
 $X_{26}X_{27}X_{28}AX_{29}X_{30}X_{31}CX_{32}X_{33}X_{34}SX_{35}X_{36}FX_{37}GX_{38}CX_{39}X_{40}X_{41}X_{42}X_{43}CX_{44}X_{45}X_{46}C$
 $X_{47}X_{48}EX_{49}FX_{50}X_{51}GX_{52}CX_{53}X_{54}X_{55}X_{56}X_{57}X_{58}CX_{59}CTX_{60}X_{61}CX_{62}X_{63}X_{64}X_{65}$
 $X_{66}X_{67}X_{68}X_{69}X_{70}X_{71}X_{72}X_{73}X_{74}X_{75}X_{76}X_{77}X_{78}X_{79}X_{80}X_{81}X_{82}X_{83}X_{84}X_{85}X_{86}X_{87}X_{88}X_{89}X_{90}$
 $X_{91}X_{92}X_{93}X_{94}$

wherein

X_1	=	A, G or K
X_2	=	R, N, or L
X_3	=	L, I or M
X_4	=	C, F or R
X_5	=	F or L
X_6	=	M, F or I
X_7	=	A or S
X_8	=	F, T or A
X_9	=	A, L, V or F
X_{10}	=	I, V, L or F
X_{11}	=	L or I

- 87 -

X ₁₂	=	A, I or M
X ₁₃	=	M, A or F
X ₁₄	=	M or L
X ₁₅	=	L or I
X ₁₆	=	F or V
X ₁₇	=	V, T or L
X ₁₈	=	A, T or S
X ₁₉	=	Y or T
X ₂₀	=	E or G
X ₂₁	=	V or M
X ₂₂	=	no amino acid or G
X ₂₃	=	no amino acid or P
X ₂₄	=	no amino acid, M or V
X ₂₅	=	no amino acid or T
X ₂₆	=	no amino acid, I or S
X ₂₇	=	no amino acid or A or V
X ₂₈	=	Q or E
X ₂₉	=	no amino acid or Q
X ₃₀	=	R or Q
X ₃₁	=	E, I or T
X ₃₂	=	K or E
X ₃₃	=	T, A or S
X ₃₄	=	E, P or Q
X ₃₅	=	N, Q or H
X ₃₆	=	T or R
X ₃₇	=	P, K or H
X ₃₈	=	I, L, P or T
X ₃₉	=	I, F, S or V
X ₄₀	=	T, M, R or S
X ₄₁	=	K, D, E or A
X ₄₂	=	P or S

- 88 -

X ₄₃	=	P, S or N
X ₄₄	=	R or A
X ₄₅	=	K, T, S or N
X ₄₆	=	A, Y or V
X ₄₇	=	I, L, Q or H
X ₄₈	=	S, K, T or N
X ₄₉	=	K or G
X ₅₀	=	T, S, I, or V
X ₅₁	=	D or G
X ₅₂	=	H, R, or N
X ₅₃	=	S, P or R
X ₅₄	=	K, W, A or G
X ₅₅	=	I, L or F
X ₅₆	=	L, Q, P or R
X ₅₇	=	R or P
X ₅₈	=	R or K
X ₅₉	=	L or F
X ₆₀	=	K, S or R
X ₆₁	=	P, N or H
X ₆₂	=	no amino acid or V
X ₆₃	=	no amino acid or F
X ₆₄	=	no amino acid or D
X ₆₅	=	no amino acid or E or K
X ₆₆	=	no amino acid or K or I
X ₆₇	=	no amino acid or M or S
X ₆₈	=	no amino acid or T, I or S
X ₆₉	=	no amino acid or K or E
X ₇₀	=	no amino acid or T or V
X ₇₁	=	no amino acid or G or K
X ₇₂	=	no amino acid or A
X ₇₃	=	no amino acid or E

- 89 -

X ₇₄	=	no amino acid or I or T
X ₇₅	=	no amino acid or L
X ₇₆	=	no amino acid or A, V or G
X ₇₇	=	no amino acid or E
X ₇₈	=	no amino acid or E
X ₇₉	=	no amino acid or A
X ₈₀	=	no amino acid or K
X ₈₁	=	no amino acid or T
X ₈₂	=	no amino acid or L
X ₈₃	=	no amino acid or A or S
X ₈₄	=	no amino acid or A or E
X ₈₅	=	no amino acid or A or V
X ₈₆	=	no amino acid or L or V
X ₈₇	=	no amino acid or L
X ₈₈	=	no amino acid or E
X ₈₉	=	no amino acid or E
X ₉₀	=	no amino acid or E
X ₉₁	=	no amino acid or I
X ₉₂	=	no amino acid or M
X ₉₃	=	no amino acid or D or M
X ₉₄	=	no amino acid or N or E.

7. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid is DNA.
8. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid is RNA.
9. The isolated nucleic acid molecule of Claim 1 wherein the polypeptide is produced in one or more of pistils, ovaries or anthers of flowers of a plant.

10. The isolated nucleic acid molecule of Claim 1 wherein the polypeptide is produced in pistils of flowers of a plant.
11. The isolated nucleic acid molecule of Claim 1 wherein the polypeptide is produced in epidermal layers of petals and sepals, cortical cells of a style and/or the connective tissue of anther.
12. The isolated nucleic acid molecule of Claim 1 wherein the plant pest is an insect.
13. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule is isolatable from *Nicotiana glauca* or varieties or strains thereof.
14. The isolated nucleic acid molecule of Claim 13 wherein the polypeptide comprises an amino acid sequence in the mature domain as set forth in SEQ ID NO:8 or an amino acid sequence having at least 70% similarity to SEQ ID NO:8 after optimal alignment.
15. The isolated nucleic acid molecule of Claim 13 comprising a sequence of nucleotides encoding the mature domain as set forth in SEQ ID NO:7 or a nucleotide sequence having at least about 70% similarity to SEQ ID NO:7 or a nucleotide sequence capable of hybridizing to SEQ ID NO:7 or its complementary form under low stringency conditions.
16. The isolated nucleic acid molecule of Claim 13 wherein the polypeptide comprises an amino acid sequence as set forth in SEQ ID NO:8.
17. The isolated nucleic acid molecule of Claim 13 comprising the nucleotide sequence set forth in SEQ ID NO:7.
18. The isolated nucleic acid molecule of Claim 1 or 13 contained in a construct

operably linked to a promoter.

19. The isolated nucleic acid molecule of Claim 1 wherein the polypeptide comprises an amino acid sequence selected from SEQ ID NO:8, SEQ ID NO:14, SEQ ID NO:16 and SEQ ID NO:18 or an amino acid sequence having at least about 70% similarity to any one of SEQ ID NO:8, SEQ ID NO:14, SEQ ID NO:16 and SEQ ID NO:18.

20. The isolated nucleic acid molecule of Claim 1 wherein the nucleic acid molecule comprises a nucleotide sequence selected from SEQ ID NO:7, SEQ ID NO:13, SEQ ID NO:15 and SEQ ID NO:17 or a nucleotide sequence having at least about 70% similarity to one of SEQ ID NO:7, SEQ ID NO:13, SEQ ID NO:15 and SEQ ID NO:17 or a nucleotide sequence of a nucleic acid molecule capable of hybridizing to one of SEQ ID NO:7, SEQ ID NO:13, SEQ ID NO:15 and SEQ ID NO:17 or their complementeary forms under low stringency conditions.

21. A genetic construct for use in generating insect-resistant transgenic plants, said transgenic plants producing a defensin or defensin-like molecule selected from SEQ ID NO:8, SEQ ID NO:14, SEQ ID NO:16 and SEQ ID NO:18 as well as SEQ ID NO:20 to SEQ ID NO:49 or an amino acid sequence having at least 70% similarity to any one of SEQ ID NO:8, SEQ ID NO:14, SEQ ID NO:16 and SEQ ID NO:18.

22. The genetic construct of Claim 21 wherein the transgenic plant is a monocotyledonous plant.

23. The genetic construct of Claim 21 wherein the transgenic plant is a dicotyledonas plant.

24. The genetic construct of Claim 21 wherein the plant is selected from wheat, rice, barley, soybean and sugarcane.

25. The genetic construct of Claim 21 wherein the plant is selected from rose,

carnation, petunia, lisianthus, lily, iris, tulip, freesia, dephinium, limorium and pelargonium.

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26. A method for generating a plant with increased or enhanced resistance to a plant pest, said method comprising introducing into the genome of a plant cell or genome of a group of plant cells a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a floral-derived, defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈
a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII}

wherein "a" may be the same or different and represents any amino acid residue, the numerical subscript on each "a" represents its position in the amino acid sequence and "C" represents a cysteine residue at a position indicated by its Roman numeral and wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests and regenerating a plant from said cell or group of cells.

27. The method of Claim 26 wherein the defensin-like molecule comprises a mature domain having the amino acid sequence set forth in SEQ ID NO:58.

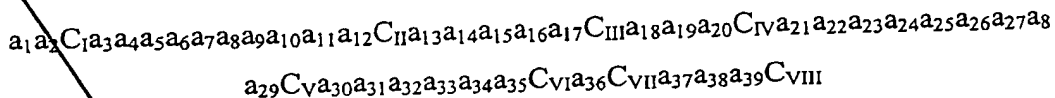
28. The method of Claim 27 wherein the defensin-like molecule comprises a mature domain having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 and SEQ ID NO:8 or an amino acid sequence having at least about 70% similarity to one of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5 and SEQ ID NO:6.

29. The method of Claim 28 wherein the defensin-like molecule comprises the amino acid sequence set forth in SEQ ID NO:8.

30. The method of Claim 26 wherein the plant pest is an insect.

~~31.~~ A transfected or transformed cell, tissue or organ from a plant or a transformed microbial cell, said cell, tissue or organ comprising a nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain has activity against one or more plant pests.

22. The transfected or transformed cell, tissue or organ of Claim 31 wherei the polypeptide comprises a mature domain having the structure:



wherein "a" may be the same or different and represents any amino acid residue, the numerical subscript on each "a" represents its position in the amino acid sequence and "C" represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests.

33. The transfected or transformed cell, tissue or organ of Claim 32 wherein the polypeptide comprises an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 and SEQ ID NO:8 or an amino acid sequence having at least about 70% similarity to one of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5 and SEQ ID NO:6.

34. The method of Claim 3 wherein the defensin-like molecule comprises the amino acid sequence set forth in SEQ ID NO:8.

~~35.~~ Progeny of plants engineered to express the nucleic acid molecule encoding the defensin-like molecule as herein defined or a variant or homologue thereof as well as vegetative, propagative and reproductive parts of the plants, such as flowers (including cut

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or severed flowers), parts of plants, fibrous material from plants (for example, cotton) and reproductive portions including cuttings, pollen, seeds and callus.

~~36.~~ Genetically modified plant cell or multicellular plant or progeny thereof or parts of a genetically modified plant capable of producing a heterologous defensin-like molecule as herein described wherein said transgenic plant is resistant or has reduced sensitivity to plant pests such as insects.

~~37.~~ One or more genetic constructs alone or in combination comprising a first promoter operably linked to a first nucleotide sequence wherein said first nucleotide sequence encodes a defensin-like molecule capable of inhibiting a plant pest such as an insect, said construct further comprising a second promoter operably linked to a second nucleotide sequence wherein said second nucleotide sequence encodes a proteinase inhibitor or precursor thereof.

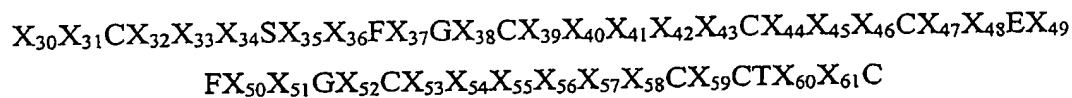
~~38.~~ An isolated polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain has activity against one or more plant pests.

~~39.~~ The isolated polypeptide of Claim 38 wherein the polypeptide comprises in its mature domain cysteine residues in the following locations:-

~~a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈
a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII}~~

wherein "a" may be the same or different and represents any amino acid residue and the numerical subscript on each "a" represents its position in the amino acid sequence and "C" represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

40. The isolated polypeptide of Claim 39 wherein the polypeptide comprises a mature domain having the amino acid sequence [SEQ ID NO:58]:



wherein	X ₃₀	=	R or Q
	X ₃₁	=	E, I or T
	X ₃₂	=	K or E
	X ₃₃	=	T, A or S
	X ₃₄	=	E, P or Q
	X ₃₅	=	N, Q or H
	X ₃₆	=	T or R
	X ₃₇	=	P, K or H
	X ₃₈	=	I, L, P or T
	X ₃₉	=	I, F, S or V
	X ₄₀	=	T, M, R or S
	X ₄₁	=	K, D, E or A
	X ₄₂	=	P or S
	X ₄₃	=	P, S or N
	X ₄₄	=	R or A
	X ₄₅	=	K, T, S or N
	X ₄₆	=	A, Y or V
	X ₄₇	=	I, L, Q or H
	X ₄₈	=	S, K, T or N
	X ₄₉	=	K or G
	X ₅₀	=	T, S, I, or V
	X ₅₁	=	D or G
	X ₅₂	=	H, R, or N
	X ₅₃	=	S, P or R

- 96 -

X₅₄ = K, W, A or G
X₅₅ = I, L or F
X₅₆ = L, Q, P or R
X₅₇ = R or P
X₅₈ = R or K
X₅₉ = L or F
X₆₀ = K, S or R
X₆₁ = P, N or H.

41. The isolated polypeptide of Claim 39 wherein the polypeptide comprises a signal domain having the amino acid sequence [SEQ ID NO:59]:-

MX₁X₂SX₃X₄X₅X₆X₇X₈X₉X₁₀X₁₁X₁₂X₁₃X₁₄X₁₅X₁₆X₁₇X₁₈X₁₉X₂₀X₂₁X₂₂
X₂₃X₂₄X₂₅X₂₆X₂₇X₂₈AX₂₉

wherein

X₁ = A, G or K
X₂ = R, N, or L
X₃ = L, I or M
X₄ = C, F or R
X₅ = F or L
X₆ = M, F or I
X₇ = A or S
X₈ = F, T or A
X₉ = A, L, V or F
X₁₀ = I, V, L or F
X₁₁ = L or I
X₁₂ = A, I or M
X₁₃ = M, A or F
X₁₄ = M or L
X₁₅ = L or I
X₁₆ = F or V

- 97 -

X ₁₇	=	V, T or L
X ₁₈	=	A, T or S
X ₁₉	=	Y or T
X ₂₀	=	E or G
X ₂₁	=	V or M
X ₂₂	=	no amino acid or G
X ₂₃	=	no amino acid or P
X ₂₄	=	no amino acid, M or V
X ₂₅	=	no amino acid or T
X ₂₆	=	no amino acid, I or S
X ₂₇	=	no amino acid, A or V
X ₂₈	=	Q or E
X ₂₉	=	no amino acid or Q.

42. The isolated polypeptide of Claim 39 wherein the polypeptide comprises a C-terminal domain having the amino acid sequence [SEQ ID NO:60]:-

X₆₂X₆₃X₆₄X₆₅X₆₆X₆₇X₆₈X₆₉X₇₀X₇₁X₇₂X₇₃X₇₄X₇₅X₇₆X₇₇X₇₈X₈₀ X₈₁X₈₂X₈₃X₈₄
X₈₅X₈₆X₈₇X₈₈X₈₉X₉₀X₉₁X₉₂X₉₃X₉₄X₉₅

wherein	X ₆₂	=	no amino acid or V
	X ₆₃	=	no amino acid or F
	X ₆₄	=	no amino acid or D
	X ₆₅	=	no amino acid or E or K
	X ₆₆	=	no amino acid or K or I
	X ₆₇	=	no amino acid or M or S
	X ₆₈	=	no amino acid or T, I or S
	X ₆₉	=	no amino acid or K or E
	X ₇₀	=	no amino acid or T or V
	X ₇₁	=	no amino acid or G or K
	X ₇₂	=	no amino acid or A

- 98 -

X ₇₃	=	no amino acid or E
X ₇₄	=	no amino acid or I or T
X ₇₅	=	no amino acid or L
X ₇₆	=	no amino acid or A, V or G
X ₇₇	=	no amino acid or E
X ₇₈	=	no amino acid or E
X ₇₉	=	no amino acid or A
X ₈₀	=	no amino acid or K
X ₈₁	=	no amino acid or T
X ₈₂	=	no amino acid or L
X ₈₃	=	no amino acid or A or S
X ₈₄	=	no amino acid or A or E
X ₈₅	=	no amino acid or A or V
X ₈₆	=	no amino acid or L or V
X ₈₇	=	no amino acid or L
X ₈₈	=	no amino acid or E
X ₈₉	=	no amino acid or E
X ₉₀	=	no amino acid or E
X ₉₁	=	no amino acid or I
X ₉₂	=	no amino acid or M
X ₉₃	=	no amino acid or D or M
X ₉₄	=	no amino acid or N or E.

43. The isolated polypeptide of Claim 39 wherein the polypeptide comprises the amino acid sequence [SEQ ID NO:61]:-

MX₁X₂SX₃X₄X₅X₆X₇X₈X₉X₁₀X₁₁X₁₂X₁₃X₁₄X₁₅X₁₆X₁₇X₁₈X₁₉X₂₀X₂₁X₂₂X₂₃X₂₄X₂₅
X₂₆X₂₇X₂₈AX₂₉X₃₀X₃₁CX₃₂X₃₃X₃₄SX₃₅X₃₆FX₃₇GX₃₈CX₃₉X₄₀X₄₁X₄₂X₄₃CX₄₄X₄₅X₄₆C
X₄₇X₄₈EX₄₉FX₅₀X₅₁GX₅₂CX₅₃X₅₄X₅₅X₅₆X₅₇X₅₈CX₅₉CTX₆₀X₆₁CX₆₂X₆₃X₆₄X₆₅
X₆₆X₆₇X₆₈X₆₉X₇₀X₇₁X₇₂X₇₃X₇₄X₇₅X₇₆X₇₇X₇₈X₇₉X₈₀X₈₁X₈₂X₈₃X₈₄X₈₅X₈₆X₈₇X₈₈X₈₉X₉₀
X₉₁X₉₂X₉₃X₉₄

- 99 -

wherein	X ₁	=	A, G or K
	X ₂	=	R, N, or L
	X ₃	=	L, I or M
	X ₄	=	C, F or R
	X ₅	=	F or L
	X ₆	=	M, F or I
	X ₇	=	A or S
	X ₈	=	F, T or A
	X ₉	=	A, L, V or F
	X ₁₀	=	I, V, L or F
	X ₁₁	=	L or I
	X ₁₂	=	A, I or M
	X ₁₃	=	M, A or F
	X ₁₄	=	M or L
	X ₁₅	=	L or I
	X ₁₆	=	F or V
	X ₁₇	=	V, T or L
	X ₁₈	=	A, T or S
	X ₁₉	=	Y or T
	X ₂₀	=	E or G
	X ₂₁	=	V or M
	X ₂₂	=	no amino acid or G
	X ₂₃	=	no amino acid or P
	X ₂₄	=	no amino acid, M or V
	X ₂₅	=	no amino acid or T
	X ₂₆	=	no amino acid, I or S
	X ₂₇	=	no amino acid or A or V
	X ₂₈	=	Q or E
	X ₂₉	=	no amino acid or Q
	X ₃₀	=	R or Q

- 100 -

X ₃₁	=	E, I or T
X ₃₂	=	K or E
X ₃₃	=	T, A or S
X ₃₄	=	E, P or Q
X ₃₅	=	N, Q or H
X ₃₆	=	T or R
X ₃₇	=	P, K or H
X ₃₈	=	I, L, P or T
X ₃₉	=	I, F, S or V
X ₄₀	=	T, M, R or S
X ₄₁	=	K, D, E or A
X ₄₂	=	P or S
X ₄₃	=	P, S or N
X ₄₄	=	R or A
X ₄₅	=	K, T, S or N
X ₄₆	=	A, Y or V
X ₄₇	=	I, L, Q or H
X ₄₈	=	S, K, T or N
X ₄₉	=	K or G
X ₅₀	=	T, S, I, or V
X ₅₁	=	D or G
X ₅₂	=	H, R, or N
X ₅₃	=	S, P or R
X ₅₄	=	K, W, A or G
X ₅₅	=	I, L or F
X ₅₆	=	L, Q, P or R
X ₅₇	=	R or P
X ₅₈	=	R or K
X ₅₉	=	L or F
X ₆₀	=	K, S or R
X ₆₁	=	P, N or H

2008-08-02 10:00:00

- 101 -

X ₆₂	=	no amino acid or V
X ₆₃	=	no amino acid or F
X ₆₄	=	no amino acid or D
X ₆₅	=	no amino acid or E or K
X ₆₆	=	no amino acid or K or I
X ₆₇	=	no amino acid or M or S
X ₆₈	=	no amino acid or T, I or S
X ₆₉	=	no amino acid or K or E
X ₇₀	=	no amino acid or T or V
X ₇₁	=	no amino acid or G or K
X ₇₂	=	no amino acid or A
X ₇₃	=	no amino acid or E
X ₇₄	=	no amino acid or I or T
X ₇₅	=	no amino acid or L
X ₇₆	=	no amino acid or A, V or G
X ₇₇	=	no amino acid or E
X ₇₈	=	no amino acid or E
X ₇₉	=	no amino acid or A
X ₈₀	=	no amino acid or K
X ₈₁	=	no amino acid or T
X ₈₂	=	no amino acid or L
X ₈₃	=	no amino acid or A or S
X ₈₄	=	no amino acid or A or E
X ₈₅	=	no amino acid or A or V
X ₈₆	=	no amino acid or L or V
X ₈₇	=	no amino acid or L
X ₈₈	=	no amino acid or E
X ₈₉	=	no amino acid or E
X ₉₀	=	no amino acid or E
X ₉₁	=	no amino acid or I
X ₉₂	=	no amino acid or M

- 102 -

X₉₃ = no amino acid or D or M

X₉₄ = no amino acid or N or E.

44. The isolated polypeptide of Claim 38 wherein the polypeptide is produced in one or more of pistils, ovaries or anthers of flowers of a plant.
45. The isolated polypeptide of Claim 38 wherein the polypeptide is produced in pistils of flowers of a plant.
46. The isolated polypeptide of Claim 38 wherein the polypeptide is produced in epidermal layers of petals and sepals, cortical cells of a style and/or the connective tissue of anther.
47. The isolated polypeptide of Claim 38 wherein the plant pest is an insect.
48. The isolated polypeptide of Claim 38 wherein the polypeptide is isolatable from *Nicotiana glauca* or varieties or strains thereof.
49. The isolated polypeptide of Claim 44 wherein the polypeptide comprises an amino acid sequence in the mature domain as set forth in SEQ ID NO:8 or an amino acid sequence having at least 70% similarity to SEQ ID NO:8 after optimal alignment.
50. The isolated polypeptide of Claim 44 encoded by a sequence of nucleotides as set forth in SEQ ID NO:7 or a nucleotide sequence having at least about 70% similarity to SEQ ID NO:7 or a nucleotide sequence capable of hybridizing to SEQ ID NO:7 or its complementary form under low stringency conditions.
51. The isolated polypeptide of Claim 44 wherein the polypeptide comprises an amino acid sequence as set forth in SEQ ID NO:8.
52. The isolated polypeptide of Claim 44 encoded by a nucleotide sequence as

set forth in SEQ ID NO:7.

53. The isolated polypeptide of Claim 38 wherein the polypeptide comprises an amino acid sequence selected from SEQ ID NO:8, SEQ ID NO:14, SEQ ID NO:16 and SEQ ID NO:18 or an amino acid sequence having at least about 70% similarity to any one of SEQ ID NO:8, SEQ ID NO:14, SEQ ID NO:16 and SEQ ID NO:18.

54. The isolated polypeptide of Claim 38 wherein the polypeptide is encoded by a nucleotide sequence selected from SEQ ID NO:7, SEQ ID NO:13, SEQ ID NO:15 and SEQ ID NO:17 or a nucleotide sequence having at least about 70% similarity to one of SEQ ID NO:7, SEQ ID NO:13, SEQ ID NO:15 and SEQ ID NO:17 or a nucleotide sequence of a nucleic acid molecule capable of hybridizing to one of SEQ ID NO:7, SEQ ID NO:13, SEQ ID NO:15 and SEQ ID NO:17 or their complementeary forms under low stringency conditions.